

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-014569

(43)Date of publication of application : 17.01.1995

(51)Int.Cl.

H01M 2/26  
H01M 10/28

(21)Application number : 05-179891

(71)Applicant : YUASA CORP

(22)Date of filing : 24.06.1993

(72)Inventor : ONISHI MASUHIRO

HASEGAWA KEIICHI

OSHITANI MASAHIKO

## (54) CURRENT COLLECTING TERMINAL AND MANUFACTURE OF STORAGE BATTERY USING SAME

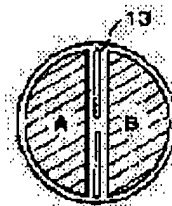
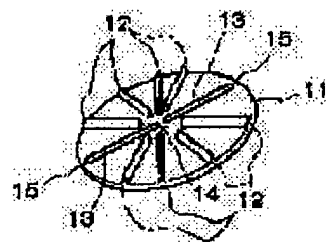
### (57)Abstract:

**PURPOSE:** To attain a large-current electric discharge by protruding conducting end edges on the upper and lower end faces of electrode plates of a storage battery, bringing a current collector into contact with the end faces, and bringing weld electrodes into contact with a current collecting terminal astride slit holes when a pair of the weld electrodes on the current collecting terminal are brought into contact.

**CONSTITUTION:** A current collecting terminal 11 has eight comb teeth 12 and slit holes 13. The terminal 11 is brought into contact with the prescribed end face of an electrode, then a pair of weld electrodes are arranged at A, B astride the slit holes 13 and resistance-welded. The

welding current is concentrated on a base material 14

sandwiched by two slit holes 13 and a base material 15 sandwiched by the slit hole 13 and the end, fusion occurs on the base material 15, and the current collecting terminal 11 is cut off into two. The reactive current at A, B is completely suppressed, and the welding current flows between A, B via the conducting end face. The comb teeth are radially formed symmetrically on the right and left, the uniform welding current flows, the welding efficiency is wholly improved, and a firm weld state is obtained.



---

**LEGAL STATUS**

[Date of request for examination] 01.10.1999

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2000 Japan Patent Office

## \* NOTICES \*

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

 CLAIMS
 

---

[Claim] -

[Claim 1] a ctenidium-like weld zone and a slit -- the \*\*\*\* terminal characterized by having a hole

[Claim 2] The \*\*\*\* terminal of the claim 1 publication characterized by arranging the ctenidium of this weld zone in the shape of a radial slit from the center.

[Claim 3] a ctenidium-like weld zone and a slit -- the time of welding by the welding pole of the couple which the \*\*\*\* terminal equipped with the hole was prepared, and electric-conduction \*\*\*\* could be projected to the vertical end face of the plate of the battery \*\*\*\*ed and constituted in positive and the negative-electrode plate, it closed to it, and this \*\*\*\*\* was this \*\*ed to the end face, and has been arranged on this \*\*\*\*\* -- the aforementioned welding pole -- this slit -- the manufacture technique of the battery characterized by being in contact with \*\*\*\*\* in

---

[Translation done.]

## \* NOTICES \*

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DETAILED DESCRIPTION

## [Detailed description]

[Field of the Invention] this invention relates to the manufacture technique of a battery of having used the \*\*\*\* terminal of alkaline batteries, such as nickel-cadmium and nickel-hydrogen, and this.

[Prior art] This kind of cell consists of positive, a negative-electrode plate, and a separator, and has two kinds which \*\*\*\* these, and consider as the spiral electrode field, or carry out the laminating of these by turns, and are used as the plate-like electrode field. and a slit which electric conduction \*\*\*\* of a predetermined plate is made to project to the vertical end face of an electrode, respectively, and is shown in each end face from the standpoint of a high-rate-discharge property as means of attachment of \*\*\*\*\* to each electrode at drawing 1 -- \*\*\*\*\* equipped with \*\*\*\*\* 5 which prepared \*\*\*\* 3 and \*\*\*\* 4 of the welding 2 and masses which have a hole 1 fixes by resistance welding this slit -- since the \*\*\*\*\* base metal 6 which exists between a hole and a \*\*\*\* outside-of-the-body edge is melted at the time of welding, the reactive current does not flow between welding poles, and \*\*\*\*\* does not deform it for welding however, a slit -- although the \*\*\*\*\* base metal 6 which exists between a hole and a \*\*\*\* outside-of-the-body edge is melted at the time of welding, since a welding 2 is in the status that connection was maintained at the time of welding, the reactive current is made not to flow between welding poles -- being alike -- the electric resistance of a welding 2 must be large It is necessary to specifically make base-metal thickness of a welding 2 thin. For this reason, if a high current is \*\*\*\*ed, sag and generation of heat will be produced in a welding 2, and fusing by generation of heat will be further caused in this fraction. That is, as for \*\*\*\*\* of such a configuration, resistance becomes comparatively large, and the allowable current of the charge and discharge of a cell will be restricted by the thickness of \*\*\*\*\* base metal.

[Object of the Invention] The trouble which this invention tends to solve can project electric conduction \*\*\*\* to the vertical end face of the power generation element which \*\*\*\*\*ed the separator and constituted positive and the negative-electrode plate, closes it to it, and this \*\*s \*\*\*\*\* to an end face, and the above-mentioned fault which battery obtained by welding by the welding pole of the couple arranged on the \*\*\*\*\* has, i.e., the fault that a high current cannot be discharged, is canceled.

[The means for solving a technical problem] the 1st \*\*\*\* terminal of this invention -- a ctenidium-like weld zone and a slit -- it has a hole As for the 2nd \*\*\*\* terminal of this invention, the ctenidium of the aforementioned weld zone is arranged in the shape of a radial slit from the center. \*\*\*\*\* equipped with the hole is prepared. the shape of a ctenidium which allotted this invention technique in the shape of a radial slit, and a slit -- Can project electric conduction \*\*\*\* to the vertical end face of the plate of the battery which \*\*\*\*ed the separator and constituted positive and the negative-electrode plate, and it closes to it. the time of welding by the welding pole of the couple which this \*\*\*\* terminal was made to this \*\* to an end face, and has been arranged on this \*\*\*\* terminal -- the aforementioned welding pole -- this slit -- it is the manufacture technique of the battery which is in contact with \*\*\*\*\* in the type over a hole

[Operation] \*\*\*\*\* base metal melts at the time of welding, and since it is completely cut by two, the reactive current does not flow. Since a welding 2 does not exist, it can be possible to change the

thickness of \*\*\*\*\* base metal arbitrarily, and the allowable current of charge and discharge can be increased. In order to raise the allowable current, it is effective to make weld-zone area increase. To the increase in weld-zone area, it is desirable to make the welding mark of electrode side electric conduction \*\*\*\* and \*\*\*\*\* increase, and to reduce electric resistance by increasing the number of ctenidiums. When the number of ctenidiums is made to increase, in order to acquire the equal and firm welding status to two or more ctenidiums of all, the current at the time of welding must be made to flow at all welding points equally. It is effective in it that the ctenidium-like weld zone is arranged in the shape of a radial slit from the center of a \*\*\*\* terminal.

[Example] Hereafter, one example of this invention is explained based on a drawing. the drawing in which an example of a \*\*\*\* terminal which uses drawing 2 in this invention technique is shown -- it is - - this \*\*\*\* terminal 11 -- eight ctenidiums 12 and a slit -- it has the hole 13 The process which welds the aforementioned collection \*\*\*\*\* on electric conduction \*\*\*\*\* of an electrode by this invention technique is explained based on drawing 3 and drawing 4 . first, the welding pole of a couple after this \*\*ing a \*\*\*\* terminal to the predetermined end face of an electrode -- a slit -- it welds by resistance by arranging to A and B so that a hole may be straddled the time of welding -- setting -- the welding current -- first -- two slits -- the base metal 14 sandwiched by the hole and a slit -- in order to concentrate on the base metal 15 inserted into the hole and the edge, fusing is produced in these base metal and a \*\*\*\* terminal is completely cut by two For this reason, A and the reactive current between B will be suppressed completely, and the welding current will flow between A and B via electric conduction \*\*\*\*\* . At this time, when the ctenidium is a radial for the right-and-left object, the uniform welding current can flow and the firm welding status whose weld efficiency improved to the whole can be acquired. In addition, drawing 5 is the cross section of the power generation element which welded the aforementioned collection \*\*\*\*\* by this invention technique. A power generation element is what \*\*\*\*\*ed and constituted positive and the negative-electrode plate 21-22 through the separator 23, to one end face of a power generation element, electric conduction \*\*\*\* (not shown) of the positive-electrode plate 21 has projected, and electric conduction \*\*\*\* 24 of the negative-electrode plate 22 has projected in another side. And the center section of \*\*\*\*\* 11 is used as the battery-case can (not shown) in direct welding, and serves as the negative-electrode terminal.

[Effect of the invention] As mentioned above, can project electric conduction \*\*\*\* of a predetermined plate to the vertical end face of a plate, respectively, and it closes to it. the weld zone of the shape of a ctenidium allotted in the shape of a radial slit, and a slit -- the time of welding by the welding pole of the couple which the \*\*\*\* terminal equipped with the hole was this \*\*ed to the end face, and has been arranged on this \*\*\*\* terminal -- the aforementioned welding pole -- this slit -- by being in contact with the \*\*\*\* terminal in the type over a hole Since a high current can offer the direct-vent-system cell in which \*\*\*\* is possible, the industrial value is size very much.

---

[Translation done.]